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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/913,018

08/08/2001

Motonobu Yoshikawa

10873.779USWO

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23552

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06/29/2004

MERCHANT & GOULD PC

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MINNEAPOLIS, MN 55402-0903

EXAMINER

PRITCHETT, JOSHUA L

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/913,018	Applicant(s) YOSHIKAWA ET AL.	
	Examiner Joshua L Pritchett	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-10,15,32-34,41,97,98 and 102 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6,8-10,32-34 and 41 is/are allowed.
- 6) ☒ Claim(s) 15,97,99 and 102 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

This action is in response to Amendment filed March 13, 2004 and Request for Continued Examination filed April 16, 2004. Claim 1 has been amended as requested by the applicant.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15 and 99 are rejected under 35 U.S.C. 102(b) as being anticipated by Abel (US 3,811,749).

Regarding claim 15, Abel discloses a reflective optical device comprising at least three reflection surfaces (18, 20 and 62) for bringing light fluxes from an object into focus on an image surface (P2) wherein the reflection surfaces are arranged eccentrically (Fig. 2). Abel further discloses among the reflection surfaces, the reflection surface placed second from the object side in a direction in which the light fluxes travel is given as a second reflection surface (Fig. 2) and the second reflection surface is concave (Fig. 2) in a cross sectional shape taken in the vicinity of its vertex along a plane containing

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vertices of the reflection surfaces, and its convex in a cross-sectional shape taken in a direction perpendicular to the plane (Fig. 2).

Regarding claim 99, Abel discloses wherein the reflection surfaces are for surfaces (18,20,62 and 43) that are a first surface, a second surface, a third surface, and a fourth surface in an order from the object side in a direction in which the light fluxes travel (Fig. 2).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 97 rejected under 35 U.S.C. 103(a) as being unpatentable over Abel (US 3,811,749) in view of Ohzawa (US 5,993,010).

Abel teaches the invention as claimed but lacks non-axisymmetric reflection surfaces. Ohzawa teaches the use of non-axisymmetric members in a reflecting array (col. 11 lines 43-47). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Abel reflecting surfaces be non-axisymmetric as taught by Ohzawa for the purpose of correcting ray aberrations due to oblique reflection.

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Claim 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abel in view of Ohzawa as applied to claim 1 above, and further in view of Willey (US 5,841,574).

Abel in combination with Ohzawa teaches the invention as claimed but lacks reference to the detector converting the optical signal to an electrical signal. Willey teaches the use of an electro-optic detector (col. 8 line 67 – col. 9 line 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the detector in the Abel invention convert the optical signal to an electrical signal for the purpose of precise measurement of the incoming data.

### ***Response to Arguments***

Applicant's arguments filed March 13, 2004 have been fully considered but they are not persuasive.

On pages 7 and 8 of Amendment, applicant argues that the shape of the reflection surface of Abel does not meet the claim limitations of claim 15. The shape of the reflection surface according to claim 15 has two defining characteristics. First, the reflection surface is concave in a cross-sectional shape taken in the vicinity of its vertex along a plane containing the vertices of the reflection surface. The applicant does not dispute that Abel teaches this shape limitation. Second, the reflection surface is convex in a cross-sectional shape taken in a direction perpendicular to the plane. The applicant disputes that Abel teaches this claim limitation. Based on the shapes of the second reflector in the present application shown in Figs. 1, 2, 5, 6 and 11-14, the shape taught

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by Abel appears to meet the claim limitation. The examiner can see no clear difference in the drawings provided by the applicant and the drawings of Abel.

Applicant's arguments, see Amendment, filed March 13, 2004, with respect to claims 1-6, 8-10, 32-34 and 41 have been fully considered and are persuasive. The rejection of claims 1-6, 8-10, 32-34 and 41 has been withdrawn.

***Allowable Subject Matter***

Claims 1-6, 8-10, 32-34 and 41 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 1, the prior art of record fails to teach or suggest two total non-axisymmetric reflection surfaces in an optical system to bring light into focus on an image wherein the reflection surfaces are arranged eccentrically and each of the reflection surfaces is a free form surface.

The remaining claims depend from claim 1 and are allowable for the same reasons.

***Conclusion***

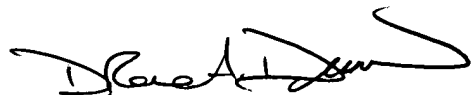
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLP 

  
**DREW A. DUNN**  
**SUPERVISORY PATENT EXAMINER**